MicroBooNE Status Report

Cindy Joe, on behalf of the MicroBooNE Collaboration
Fermilab

AEM/Lab Status Meeting
Monday 9th October 2017

Slides by Kirsty Duffy
Please direct questions to kduffy@fnal.gov

MicroBooNE's shutdown operations

- Status at last AEM (September 11th):
  - Cryogenics maintenance completed and reached a metastable state
  - New Wiener PMT HV power supply installed and commissioned (M. Matulik)
  - One PMT (PMT 18) lost due to a faulty connection, leaving 31 working PMTs

- Operation plans for last month:
  - "Late light" studies (investigations of the single photon rate)
  - Continue to investigate "zig-zag" noise (last source of persistent noise in the detector whose source has not been identified)
  - Investigate effect of lost PMT, assess whether a change in trigger conditions is needed

- Current work:
  - Moved to stable off-beam data-taking in preparation for return of beam
  - Possibility to continue late light studies before beam resumes

Effect of lost PMT

- Reminder: reported last month that **PMT 18 was lost** during shutdown work. Cause was a faulty connection (loose nut) on a SHV connector.
- Work has been done to investigate whether we need to **change our trigger** configuration to account for this
- Preferentially studied impact on low energy electrons and protons → most directly impact MicroBooNE's signature physics results
- Preliminary results show:
  - Over the whole detector, expect trigger rate to stay **roughly the same** (maximum difference ~5%)
  - Events immediately next to PMT 18 most strongly affected (max. 15% drop in trigger rates)
- Several other additional studies planned, but current plan is **not to modify the trigger** for the next run period

News

- Late light study:
  - Planned to take data with HV on for 1 week, then ramp down and take 24 hours of data with HV off
  - Multiple problems getting scope to talk to readout
  - HV-on data collected, but study wrapped up without ramping down HV
  - If the issues can be resolved, plan to take 24 hours out of off-beam data-taking at some point to collect late light data with HV down

- Zig-zag noise investigation
  - 0.3V potential difference found between flange and cryostat, shorted with copper tape
  - Consulting with Brookhaven about more thoroughly connecting flange to cryostat (expect tests today)

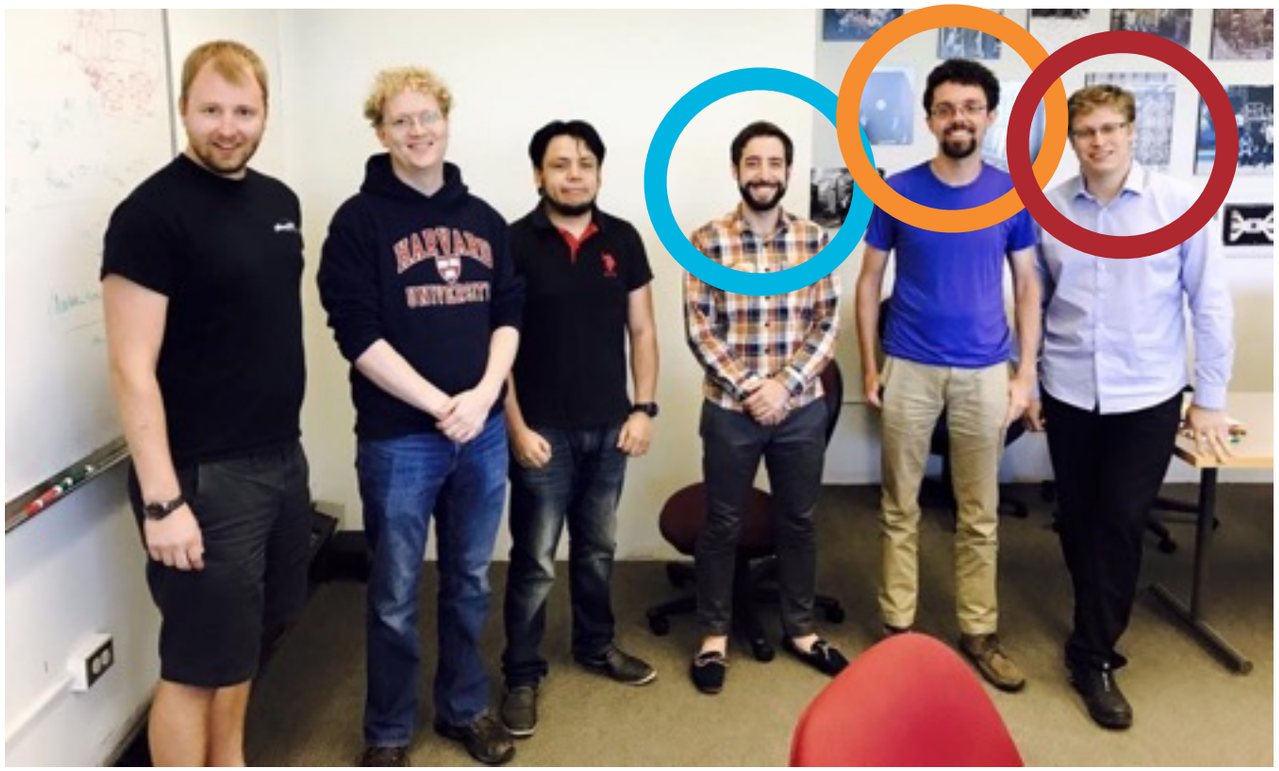
- DAQ tests for SN stream have continued throughout this period

News

- Moved into off-beam data-taking running mode on **Friday afternoon**
  - Trigger will **remain unchanged** for the time being

- Plan to continue to run in this mode, but allow for possible interruptions (before return of beam) for:
  - 24 hours late light data with HV off
  - Further study to assess grounding of PMT flange (M. Matulik)

- Change of Run Co-ordinators!
  - Thank you to our outgoing RunCo **Kevin**, incoming RunCo **Pip**, and incoming Deputy RunCo **Adrian**



Summary

- Impact of lost PMT was assessed and decided that **no change to the trigger** is needed for the time being

- Some hardware issues affected end-of-shutdown studies (late light study and investigation of flange grounding). May allow more time before beam resumes to complete these studies

- **MicroBooNE resumed off-beam data taking on Friday afternoon** and will remain in that configuration (with the possible two interruptions above)

- **MicroBooNE did a lot this summer, and is now ready to collect beam!**